SPEAKER APPARATUS AND ELECTRONIC APPARATUS INCLUDING SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Korean Patent Application No. 10-2015-0105074, filed on Jul. 24, 2015, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

BACKGROUND

[0002] 1. Field

[0003] Apparatuses consistent with exemplary embodiments relate to a speaker apparatus and an electronic apparatus including the same.

[0004] 2. Description of the Related Art

[0005] Along with the recent development of flat display panel technology, electronic apparatuses such as digital televisions (DTVs) have slim design. A speaker apparatus for outputting a sound, which is installed in the electronic apparatuses, has also been demanded to have an appropriate shape and thickness to fit in the slim electronic apparatuses.

[0006] For example, an electronic apparatus may include a small opening in a thin slit shape opened in a front direction in which a viewer or an audience is located, and a speaker apparatus outputs or emits a sound through the small opening.

[0007] A speaker unit of the speaker apparatus is required to have a certain size in order to have a sound pressure of a certain level or more. The size of the speaker unit may be larger than a size of the opening provided on the electronic apparatus. In this case, a portion of the speaker unit is hidden so as not to be viewed from the front.

[0008] As such, when a sound from one portion of the speaker unit is output through the opening while the other portion of the speaker unit is hidden behind the opening, deterioration of sound quality becomes a problem.

SUMMARY

[0009] One or more exemplary embodiments provide a speaker apparatus capable of providing wide horizontal directivity while outputting a sound in a high-frequency domain, which has a sound pressure of a certain level or more, and an electronic apparatus including the same.

[0010] Additional aspects will be set forth in part in the description which follows and, in part, will be apparent from the description, or may be learned by practice of the presented exemplary embodiments.

[0011] According to an aspect of an exemplary embodiment, a speaker apparatus includes: a speaker unit including a magnet configured to provide a magnetic field and a membrane disposed in the magnet field and configured to be vibratable in a first direction and emit a sound in a front direction that is one direction of a second direction perpendicular to the first direction; and a blocking unit disposed in the front direction of the membrane and configured to block a region corresponding to a partial height of the total height of the membrane in the first direction from being exposed to the front direction and expose a region corresponding to the remaining height of the total height of the membrane to the front direction, wherein the first direction is an up-down direction perpendicular to a floor, a width of the membrane in a third direction that is perpendicular to the first and second directions is greater than the height of the membrane in the first direction, and the height of the membrane blocked by the blocking unit is less than a half of a wavelength corresponding to a maximum frequency in a frequency domain of the sound emitted from the membrane.

[0012] The membrane may have a meandering shape along the first direction and vibrate while facing regions facing each other are moving in opposite directions along the first direction.

[0013] The frequency domain of the sound emitted from the membrane may satisfy a sound pressure level that is equal to or greater than a sound pressure level lower by 6 dB than a mean sound pressure level of the sound emitted from the membrane.

[0014] The maximum frequency may be about 20 KHz, and the half of the wavelength corresponding to the maximum frequency may be about 8.5 mm.

[0015] The height of the membrane exposed to the front direction by the blocking unit may be about 5 mm or less.

[0016] The total height of the membrane may be less than about 13.5 mm.

[0017] The speaker apparatus may further include an enclosure configured to accommodate the speaker unit, wherein the total height of the enclosure in the first direction is less than about 16.5 mm.

[0018] A width of the membrane in the third direction may be less than about 42 mm.

[0019] A sound-absorption member may be disposed on at least one of both end portions of the membrane in the third direction.

[0020] The membrane may include facing regions facing each other in the first direction and a connection region disposed between the facing regions to connect the facing regions, the connection region may include a ridge region disposed in the front direction and a valley region disposed in a rear direction, and the sound-absorption member may be disposed in a certain space defined by the facing regions and the valley region.

[0021] The blocking unit may be further configured to expose a region corresponding to a partial width of the total width of the membrane in the third direction to the front direction and block a region corresponding to the remaining width of the total width of the membrane from being exposed to the front direction.

[0022] The width of the membrane exposed by the blocking unit may be about 25 mm or less.

[0023] The width of the membrane blocked from being exposed to the front direction by the blocking unit may be less than the half of the wavelength corresponding to the maximum frequency of a sound emitted from the membrane.

[0024] A sound-absorption member may be disposed in a region in which the membrane is blocked from being exposed to the front direction by the blocking unit.

[0025] The blocking unit may include a front grill disposed in the front direction of the membrane and a display unit disposed in the front direction of the front grill.

[0026] A region corresponding to the partial height of the total height of the membrane in the first direction may be blocked from being exposed to the front direction by at least one of the display unit and the front grill.

[0027] A region corresponding to the partial width of the total width of the membrane in the third direction may be